

TITLE OF THE INVENTION

MICROWAVE OVEN

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of Korean Application No. 2003-5182, filed January 27, 2003, in the Korean Intellectual Property Office, the disclosure of which is incorporated herein by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0002] The present invention relates, in general, to microwave ovens and, more particularly, to a microwave oven which is provided with a toasting cavity for toasting bread.

2. Description of the Related Art

[0003] As is well known to those skilled in the art, a microwave oven is an appliance which cooks food laid in its cooking cavity using microwaves irradiated from a magnetron into the cooking cavity. That is, a general cooking device cooks food by heating the surface of the food, but the microwave oven is operated such that its magnetron irradiates microwaves into the cooking cavity to vibrate water within food and generate frictional heat within the food, thus cooking it. Recently, a microwave oven with a heater in its cooking cavity was proposed. The microwave oven cooks food using heat generated from the heater installed in the cooking cavity as well as heat generated by microwaves, thus more effectively cooking food.

[0004] Toast is made by heating the surface of bread. Thus, in the case of toasting bread, the conventional microwave oven uses microwaves, so its cooking efficiency is poor, in comparison with conventional electrical heating devices which cook food by heating the surface of food.

[0005] Further, the microwave oven having the heater in its cooking cavity may heat bread using heat generated from the heater, thus being capable of toasting the bread. However, such a microwave oven has a problem in that the heater is installed at an upper portion of the cooking cavity, so an additional shelf is needed to place the bread closer to the heater, thus being inconvenient to use. Further, the bread must be turned over during toasting to uniformly

heat both surfaces of the bread, thus being more complicated to use.

SUMMARY OF THE INVENTION

[0006] Accordingly, it is an aspect of the present invention to provide a microwave oven which is provided with a toasting cavity in addition to a microwave cooking cavity, thus making well-toasted bread.

[0007] Additional aspects and advantages of the invention will be set forth in part in the description which follows and, in part, will be obvious from the description, or may be learned by practice of the invention.

[0008] The foregoing and/or other aspects of the present invention are achieved by providing a microwave oven, including a cabinet partitioned into a microwave cooking cavity, a toasting cavity, and a machine room, a microwave generating unit installed in the machine room to irradiate microwaves into the microwave cooking cavity, a heating unit installed in the toasting cavity to heat the toasting cavity, and a ventilating unit to ventilate the toasting cavity.

[0009] Further, according to the present invention, the toasting cavity is provided above the microwave cooking cavity, and the machine room is located at a side of the toasting cavity and the microwave cooking cavity.

[0010] The heating unit includes an upper heater installed at an upper portion of the toasting cavity, and a lower heater installed at a lower portion of the toasting cavity. A grill member is located above the lower heater, with bread being placed on the grill member.

[0011] Further, the ventilating unit includes an air inlet port provided at a predetermined position on a sidewall between the machine room and the toasting cavity, and a ventilating fan mounted at the position on the sidewall through which the air inlet port circulates air from the machine room into the toasting cavity. Also, an air outlet port is located at a predetermined position on a wall of the toasting cavity to discharge air from the toasting cavity to the outside of the microwave oven.

[0012] A deodorizing filter is located at the position on the wall through which the air outlet port is formed to remove odors from the air which is discharged from the toasting cavity to the outside of the microwave oven.

[0013] The toasting cavity and the microwave cooking cavity are opened at the fronts thereof, and doors are mounted to the open fronts of the toasting cavity and the microwave cooking cavity, thus opening or closing the toasting cavity and the microwave cooking cavity, respectively.

[0014] A high-voltage transformer and a high-voltage condenser are installed in the machine room to apply a high voltage to the microwave generating unit, and a cooling fan is installed in the machine room to cool the high-voltage transformer and the high-voltage condenser.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] These and/or other aspects and advantages of the invention will become apparent and more readily appreciated from the following description of the preferred embodiments, taken in conjunction with the accompanying drawings of which:

FIG. 1 is a perspective view of a microwave oven, according to an embodiment of the present invention;

FIG. 2 is a sectional view of the microwave oven of FIG. 1; and

FIG. 3 is a sectional view taken along the line III-III' of FIG. 2.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0016] Reference will now be made in detail to the present preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings, wherein like reference numerals refer to the like elements throughout. The embodiments are described below in order to explain the present invention by referring to the figures.

[0017] As is illustrated in FIGS. 1 and 2, a microwave oven 100 according to the present invention includes a cabinet 10. The cabinet 10 is partitioned into a microwave cooking cavity 11, a toasting cavity 12, and a machine room 13. Food is heated and cooked using microwaves in the microwave cooking cavity 11. Bread is toasted in the toasting cavity 12. Several electrical devices are installed in the machine room 13. In this case, the toasting cavity 12 is located above the microwave cooking cavity 11, and the machine room 13 is located at a side of the microwave cooking cavity 11 and the toasting cavity 12.

[0018] The microwave cooking cavity 11 and the toasting cavity 12 are opened at the fronts thereof, thus allowing food to be put into or taken out from the microwave cooking cavity 11 or the toasting cavity 12. Doors 14 and 15 are mounted to the fronts of the microwave cooking

cavity 11 and the toasting cavity 12, thus opening or closing the microwave cooking cavity 11 and the toasting cavity 12, respectively. A control panel 16 is mounted to the front of the machine room 13, and is provided with a display unit 17 which displays the operation of the microwave oven 100 and a plurality of control buttons 18 which controls several functions of the microwave oven 100. The doors 14 and 15, which open or close the microwave cooking cavity 11 and the toasting cavity 12, respectively, are hinged at their lower portions to the fronts of the microwave cooking cavity 11 and the toasting cavity 12 to be rotated forward and backward. Hooks 14a and 15a are located on upper portions of the doors 14 and 15, respectively.

[0019] A cooking tray 21 is mounted to a lower portion of the microwave cooking cavity 11 to be rotated to heat food placed on the cooking tray 21 uniformly. A drive motor 22 is installed in the space between the bottom of the microwave cooking cavity 11 and the cabinet's bottom under the microwave cooking cavity 11 to rotate the cooking tray 21. A magnetron 23, a high-voltage transformer 24, and a high-voltage condenser 25 are installed in the machine room 13. The magnetron 23 irradiates microwaves into the microwave cooking cavity 11. The high-voltage transformer 24 and the high-voltage condenser 25 function to apply a high voltage to the magnetron 23. Further, a cooling fan 26 is mounted to a rear wall of the machine room 13, and functions to blow exterior air into the machine room 13 to cool the electrical devices installed in the machine room 13.

[0020] Upper and lower heaters 27 and 28 are mounted to upper and lower portions of the toasting cavity 12, respectively, to heat and toast bread. When power is applied to the microwave oven 100, the upper and lower heaters 27 and 28 are heated. A grill member 29 made of a plurality of wires is provided above the lower heater 28 in the toasting cavity 12 so that bread placed on the grill member 29 is spaced apart from the lower heater 28.

[0021] As illustrated in FIGS. 1 and 3, the toasting cavity 12 is provided with a ventilating unit to ventilate the toasting cavity 12. The ventilating unit includes a plurality of air inlet ports 31, a ventilating fan 32, and a plurality of air outlet ports 34. A sidewall 30 between the machine room 13 and the toasting cavity 12 is perforated in a predetermined area to form the air inlet ports 31. The ventilating fan 32 is mounted at the sidewall through which the air inlet ports 31 are formed, thus circulating air from the machine room 13 into the toasting cavity 12. A rear wall of the toasting cavity 12 is perforated in a predetermined area to form the air outlet ports 34, thus discharging air from the toasting cavity 12 to the outside of the microwave oven. Further, a deodorizing filter 35 is provided at the rear wall through which the air outlet ports 34 are formed.

[0022] An annular air guide member 33 is located on the sidewall 30 through which the air inlet ports 31 are formed, and guides air so that it flows into the toasting cavity 12 through the air inlet ports 31 by operation of the ventilating fan 32. Further, a depressed seat 36 is located on the rear wall of the toasting cavity 12, so that the deodorizing filter 35 is seated into the depressed seat 36. A cover member 37 is fastened to the depressed seat 36 using setscrews 38 to cover the deodorizing filter 35. A plurality of perforations 37a are located in the cover member 37.

[0023] The operation and use of the microwave oven 100 according to the present invention is described below.

[0024] When one desires to heat and cook food using microwaves, the food is laid in the microwave cooking cavity 11. Next, with the operation of the microwave oven 100, microwaves generated from the magnetron 23 are irradiated into the microwave cooking cavity 11, thus cooking the food.

[0025] Meanwhile, when one desires to toast bread, the bread is placed on the grill member 29 installed in the toasting cavity 12. Thereafter, the control panel 16 is manipulated to heat the upper and lower heaters 27 and 28, thus toasting the bread. At this time, smoke and odors generated in the toasting cavity 12 are discharged to the outside of the microwave oven 100 by the operation of the ventilating fan 32. That is, when the ventilating fan 32 is operated, air flows from the machine room 13 through the air inlet ports 31 into the toasting cavity 12. Air in the toasting cavity 12 is discharged to the outside through the air outlet ports 34.

[0026] Further, smoke and odors in the discharged air are removed while passing through the deodorizing filter 35, thus preventing the air of a room from being contaminated by the air discharged from the toasting cavity 12. Further, the bread placed on the grill member 29 is simultaneously heated by the upper and lower heaters 27 and 28, thus allowing both surfaces of the bread to be uniformly toasted.

[0027] As is apparent from the above description, the present invention provides a microwave oven, which has a toasting cavity in addition to a microwave cooking cavity, thus allowing food to be cooked using microwaves and making well-toasted breads.

[0028] Although a few preferred embodiments of the present invention have been shown and described, it would be appreciated by those skilled in the art that changes may be made in

these embodiments without departing from the principles and spirit of the invention, the scope of which is defined in the claims and their equivalents.